

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-295/89036; 50-304/89032(DRP))

Docket Nos. 50-295; 50-304

License Nos. DPR-39; DRP-48

Licensee: Commonwealth Edison Company
P. O. Box 767
Chicago, IL 60690

Facility Name: Zion Nuclear Power Station, Unit 1

Inspection At: Zion, IL

Inspection Conducted: October 18 through November 6, 1989

Inspectors: R. J. Leemon
W. J. Kropp

Approved By: J. M. Hinds, Chief
Reactor Projects Section 1A

NOV 9 1989
Date

W D Shafer for

Inspection Summary

Inspection from October 18 - November 6, 1989 (Report Nos. 50-295/89036;
50-304/89032(DRP))

Areas Inspected: Special, unannounced resident inspection of the failure to declare the diesel generators inoperable when the diesel generator room ventilation systems were out of service.

Results: In the area inspected, one violation was identified (Technical Specification violation - operation with diesel generators inoperable for a period in excess of the action requirements). The licensee failed to initiate a Technical Specification time clock when the diesel generator room ventilation systems were inoperable. The ventilation systems perform a safety function as described in the Updated Final Safety Analysis Report; however, this function is not specified in the Technical Specification. The licensee did not consider that a necessary safety support system was lost when the diesel generator room ventilation systems were taken out of service and that the diesel generators were therefore inoperable.

DETAILS

1. Persons Contacted

- * T. Joyce, Station Manager
- W. Kurth, Superintendent, Production
- * P. LeBlond, Assistant Station Superintendent, Operations
- * W. Stone, Regulatory Assurance Supervisor
- * T. Saksefski, Regulatory Assurance Engineer
- * T. Rieck, Technical Superintendent
- * W. T'Niemi, Technical Staff Supervisor
- * E. Fuerst, Zion Project Manager, Nuclear Operations PWR Projects Department
- * J. Smith, Senior Resident Inspector
- * R. Leemon, Resident Inspector
- * A. Bongiovanni, Resident Inspector

*Indicates persons present at the exit interview on November 6, 1989.

Discussions were also held with members of the Technical Staff.

2. Operation of Unit 1 and Unit 2 with the Diesel Generators' (DG) Ventilation Systems (71707)

a. Background

Each DG room has a ventilation system that is described in the Updated Final Safety Analysis Report (UFSAR), Section 9.10.6. The UFSAR states that each DG room ventilation system is designed to limit the maximum room ambient temperature to 115 degrees F. Also, the system is identified as part of engineered safeguards and is required to operate for all loss of off-site power conditions. Each DG room ventilation system consist of a ventilation fan, inlet damper, ductwork, instrumentation and associated control circuits. The inlet dampers also perform a function as aircraft crash dampers as described in UFSAR, Sections 9.10.6, and 9.10.9, and USFAR question 2.28. The DG room ventilation systems are not specifically identified in the Technical Specification (TS); but, based on the description in the UFSAR are considered a necessary support system for DG operability. The inlet dampers' function as a aircraft crash damper is addressed in TS surveillance requirement, 4.17.2.1.b. This surveillance required verification every six months that the dampers would close in two seconds. If the damper failed to close in two seconds the TS required the damper to be placed in the closed position. The closure of the damper to comply with this TS requirement also resulted in the DG room ventilation system's inability to meet the engineered safeguard function described in the UFSAR.

Due to hardware problems with the inlet dampers, the TS surveillance requirement for the aircraft crash damper was not consistently met. The licensee initiated a modification to the inlet damper controls to increase the reliability. The modification included a change to the failure mode of the all DG room ventilation inlet dampers from fail "open" to fail "close".

b. Event Chronology

- 5/27/80 Special test on 2B DG performed for Sargent & Lundy to determine room temperature rise. (To date, licensee has not been able to furnish test procedure or results)
- 3/15/89 1A and 1B DG vent dampers taken out-of-service (OOS) for modification No. 1-86-5 to replace 3-way solenoid and Miller valves with a 4-way solenoid.
- 3/20/89 2A and 2B DG vent fan dampers taken OOS for modification No. 2-86-5 to replace 3-way solenoid and Miller valves with a 4-way solenoid.
- 5/24/89 TS change 89-10 to remove aircraft crash requirements mailed for Off-Site review. This change was initiated due to a TMI DCRDR concern.
- 6/16/89 2A and 2B DG vent fan dampers fail stroke time while being tested in conjunction with modification 2-86-5 .
- 6/19/89 TS change 89-10 off-site review completed.
- 7/18/89 TS change 89-10 submitted to NRR.
- 8/10/89 1A and 1B DG vent fan dampers returned to service after completion of modification 1-86-5.
- 9/08/89 Telephone conference call between licensee and NRR to discuss TS change 89-10.
- 10/19/89 Resident staff discussed with licensee the out of service of the 2A and 2B DG room ventilation systems. After discussions with the resident staff the licensee considered another test similar to the 1980 DG room temperature test.
- 10/20/89 Resident inspectors witnessed monthly TS surveillance on 2B DG. DG room temperature exceeded the UFSAR temperature of 115°F. Room temperature approached 120°F with room doors open at the time of the surveillance. The 2B DG room temperature alarm function was inoperable and no compensatory action to monitor room temperature was initiated by the licensee. Room temperature was lost due to isolation of air to the inlet damper as part of the OOS.

10/25/89 "0" DG aircraft crash damper failed TS closure time at 12:30 p.m. Damper was placed OOS and ventilation fan was pull-to-lock (PTL).

10/25/89 Temporary Lift of OOS for 2A, 2B, and "0" DG aircraft crash dampers. Licensee requested Waiver of Compliance for closure time of dampers. The dampers were opened and the systems were returned to service.

c. Safety Significance

The design basis (UFSAR) states that the DG room ventilation systems were designed to limit the maximum ambient in the DG rooms to 115 degrees F. The resident staff observed, on October 20, 1989, during the monthly TS surveillance on 2B DG, that the temperature in the room was 118 degrees and the discharge of the air cooler for the 2B diesel generator was 148 degrees F. The diesel generator had been running for about 1 hour with the DG room doors opened to the turbine building. The room temperature was measured just inside the DG door and may not have been a true indication of the overall room temperature. Elevated DG room temperatures could affect DG reliability to provide electrical power to the safeguard busses during a loss of off-site power.

d. Concerns

The licensee appears to have a restrictive application of Technical Specifications requirements to support systems. When a safety function of a component's support system described in the UFSAR was lost and the support system was not described in the TS, the affected component was not declared inoperable. A similar concern was identified in inspection report 50-295/89017 and was discussed during an enforcement conference on May 31, 1989. Also, a 50.59 review for a modification to change the failure mode of the DG room ventilation inlet dampers from fail "open" to fail "close" only discussed the function of the inlet dampers as aircraft crash dampers and did not address the damper's engineered safeguard function as a supply to DG room cooling during loss off-site power.

e. Enforcement

Technical Specification (TS) 3.15.2.C required during power operation that the 1(2)"A", 1(2)"B" and "0" (common) diesel generators (DG) shall be operable. From and after the date that one of the DGs for a unit is made or found inoperable, reactor operation on that unit is permissible only during the succeeding 7 days provided that the other two DGs are available. Technical Specification 3.0.3 requires that if a LCO and/or ACTION requirements cannot be satisfied, action shall be initiated within one hour to place the unit in at least HOT SHUTDOWN within the following 4 hours and in at least COLD SHUTDOWN within the following 48 hours. Technical Specification 1.27 (definitions) states that a system, subsystem, train, component or device shall be operable or have operability when it is capable of

performing its specified function(s) and when all necessary attendant instrumentation, controls, electric power, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related support function(s). Also, the Updated Final Safety Analysis Report (UFSAR), Section 9.10.6.2.2, states that each DG room ventilation system is designed to limit the maximum room ambient to 115 degrees F. It further states that this system is part of the engineered safeguards and is required to operate for all loss of off-site power conditions. The licensee had the 1A, 1B, 2A, 2B and "0" (common) DG rooms ventilation systems out of service during the following periods:

UNIT 1

1"A"----March 15 to August 10, 1989

1"B"----March 15 to August 10, 1989

UNIT 2

2"A"----June 7 to October 25, 1989

2"B"----June 7 to October 25, 1989

UNIT 0 (COMMON)

"0"-----June 6 to July 7, 1989
October 25, 1989 from 12:30 p.m. to 5:30 p.m.

For the time frames identified above, the licensee did not declare the DGs inoperable. Therefore, the licensee failed to enter TS 3.0.3 from March 15 to August 10, 1989, for Unit 1 and June 7 to October 25, 1989, for Unit 2 when more than one DG were inoperable at the same time. Also, on October 20, 1989, during the 2B DG TS monthly surveillance test the temperature as measured inside the DG room reached 118 degrees F as observed by the NRC residents. This is considered an apparent violation (295/89036-01; 304/89032-01).

f. Corrective Actions

The immediate corrective action consisted of the licensee's request for a waiver of compliance to the TS requirement that pertained to the aircraft crash damper closure time. The waiver was granted by NRR on October 25, 1989. The dampers for the 2A and 2B DG that had been failed closed due to not meeting the TS requirement closure time were opened and the DG room ventilation systems were returned to service on October 25, 1989 at 5:40 p.m.

The long term corrective action was discussed in the waiver of compliance document dated October 27, 1989 that required the licensee to install a modification to improve damper closure times. Also, further information concerning the TS change was requested.

One apparent violation and no deviations were identified.

3. Exit Interview (30703)

The inspectors met with licensee representatives (denoted in Paragraph 1) throughout the inspection period and at the conclusion of the inspection on November 6, 1989, to summarize the scope and findings of the inspection activities. The licensee acknowledged the inspectors' comments. The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents or processes as proprietary.